Commercial Demonstration of the Manufactured Aggregate Processing Technology Utilizing Spray Dryer Ash

Quarterly Technical Progress Report
October 1, 2006 through December 31, 2006

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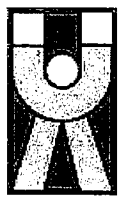
January 2007

DOE Cooperative Agreement DE-FC26-02NT41421



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DISCLAIMER

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ABSTRACT

This is the quarterly report under the subject agreement for the period from October 1, 2006, through December 31, 2006. The report summarizes activities for the project for the period in the following categories: personnel, operations, engineering, technical support, marketing support, miscellaneous, and DOE.

EXECUTIVE SUMMARY

During this quarter, BPP's scheduled maintenance outage, which began in late September, was extended until late November. Without SDA to process, UA completed an extensive list of repairs, maintenance and modifications. Internal flow control dampers were installed at the base of the curing vessel (CV) and the vessel was recharged with material. Numerous velocity-profiling tests were completed as the CV was recirculated. On November 24, the plant resumed processing SDA on a limited basis. For the quarter, approximately 6,875 tons of dry SDA were processed and aggregate production totaled 1,276 tons.

EXPERIMENTAL

This section is not applicable to this project.

RESULTS AND DISCUSSION

Personnel

The plant continues to be operated and staffed on a 24-hour/7-day basis. In November, the plant supervision was restructured so that a designated superintendent or foreman would be on duty at every shift. In addition, the former regional sales broker for UA's aggregate product was hired as the regional sales manager. The breakdown of employees at the plant is currently four salaried and 19 hourly workers.

Operations Summary

In October, the plant was down the entire month due to a scheduled maintenance outage by BPP. UA personnel entered the CV and completed removal of any internal deposits. An extensive list of maintenance and repairs were completed throughout the facility, including: thorough cleaning of electric room and servicing of all wiring, inspection/lubrication/service of all plant gearboxes and conveyor belts, removed and modified ductwork at numerous locations, cleaned/serviced water spray box at pug mill, thoroughly cleaned and replaced knives in both pug mill and pug sealer, replaced extruder liner with one-piece prototype design, re-configured bin vents for Acrison feeders, repaired condensate pump, replaced flange gaskets on steam skid, replaced/upgraded hardware on Schlagel rotary distributor, drained/cleaned process water tank, recharged and recirculated the CV, and replaced hammers in lime pulverizer. In addition, mechanical contractors installed adjustable flow dampers at the base of the CV, a pneumatic slide gate at discharge of F250 recycle bin, and wear-resistant elbows on the CV recirculation piping.

In November, the UA plant was down most of the month as BPP extended its scheduled outage due to turbine problems at restart. Approximately 769 tons of dry SDA were processed this month. Numerous velocity profile tests were conducted as material was recirculated through the CV. The new flow CV flow dampers were adjusted as required to achieve uniform velocity in each of the four cans. In total, more than 1,000 tons were recirculated through the CV. During a trial start-up of the plant, the horizontal impactor incurred significant damage. The damage was assessed, replacement parts were expedited, and all necessary repairs were completed.

At mid-month, a large trommel screener was procured and used to screen the entire inventory of product in the yard (~1,500 tons). The screening was necessary to eliminate chunks that had formed in the stockpile. The plant resumed processing SDA on a limited basis on November 24. BPP's production of SDA remained minimal due to switchgear problems and mild weather. Consequently, there were no attempts to charge the CV this month.

In December, approximately 6,106 tons of dry SDA were processed through the plant. Unseasonably mild weather caused BPP to operate at reduced loads this month. Consequently, UA operated at lower throughputs to match BPP's SDA production. In addition, the plant was shutdown on Christmas day. Aggregate production for the month totaled 1,276 tons.

Initial attempts to charge the CV revealed a loose motor lead and a worn sprocket on bucket elevator BE250 and a damaged discharge chute on the secondary screen. Both conditions were repaired as necessary. Additional maintenance was required to clear build-ups at the tumbler and the CV pant legs. At mid-month, it was determined that the internal ribs of the one-piece extruder liner were badly worn and restricting flow through the extruder dye plate. The worn rib sections were removed and replaced, which remedied the problem.

Engineering:

Engineering was on site throughout the quarter to support maintenance activities, plant operations and supervise contract workers.

In October, Steve Joyce of Jardar (manufacturer of the wet scrubber) was on-site to review/analyze operational problems with the scrubber. Airotech Environmental was consulted regarding a revised ventilation system for the top of the CV. The new design would employ cartridge dust collectors (on CV cans) to replace the wet scrubber. An order was placed for four cartridge dust collectors and a 100 kW duct heater. A purchase order was issued and preliminary design discussions for a twin shaft pug mill began with engineers from Diamond America (DA). Following an inspection by the VADEQ in September, a detailed response was prepared addressing documentation, dust collector maintenance, and operator training.

In November, discussions continued with DA (and other consultants) on the design details of the new twin shaft pug mill. Approval drawings for the pug mill were finalized and signed on November 17. An order was also placed for a 100 HP variable frequency drive for the new pug mill. The layout and structural steel for the new pug mill were reviewed with engineers at R.T. Patterson (RTP). A meeting was held with mechanical and crane contractors to review logistics of the pug mill removal and installation. Electrical switchgear and supplies were specified for the new duct heater for the top of the CV. Received and reviewed vendor quotation for new screw conveyor required for the new recycle feeder. Acrison approval drawings were not yet received.

In December, pugknives for the new pug mill were ordered, powder coated at a local shop, and delivered to DA. Acrison approval drawings were received and reviewed. A change in the orientation of the rotary valves was submitted to Acrison. Equipment layouts for new pug mill, catwalk extension, new Acrison feeders, and access platform for the K250 recycle feeder were reviewed with engineers at RTP. At month's end, UA engineers traveled to DA to inspect the pug mill and tour their facilities.

Technical Support
The QA/QC program was implemented in each shift during integrated run for aggregate production in December. Throughout production, the quality of produced materials was monitored at three separate locations (extruder, CV charge and CV discharge). Samples collected must meet established quality specifications for continuing curing vessel charge and aggregate production. Technical support was provided for air classifier operation optimization, start-up during initial CV charge, aggregate quality improvement, recycle quality evaluation, and management of Birchwood SDA silo level.

Marketing Support
Marketing support participated in various activities this quarter, including: periodic meetings/communications with product broker and potential users regarding status of plant operations, general assistance with plant operations/product quality control/ transportation, and provided assistance to a potential customer (near Norfolk, VA) in clearing a plugged aggregate feed hopper.

A "Statement of Use" application was filed with the U.S. Patent and Trademark Office under the product name "Versalite". While negotiating the sales contract with product broker, UA elected to hire Mr. Doug Clarke as a full-time regional sales manager. Mr. Clarke will continue his sales efforts as he did as a contracted broker, but as an employee of Universal Aggregates LLC.

Miscellaneous:
General housekeeping was conducted throughout the facility. The vibratory feeder on the CV recirculation system was cleaned and re-positioned to improve throughput. The rebuilt eductor for the plant baghouse (BF550) was re-installed. Contractors completed installation of a pressure regulating station on the incoming steam line. The new steam system was brought on-line and is performing well. A failed process water pump was examined and repaired as necessary. Communications and paperwork were completed as required to dispose of a radioactive source (Cesium 137). The source was part of nuclear belt scale installed on an unused conveyor belt. Contract electricians completed routing conduit and power required for the new 100 kW heater at the top of the CV. The pressure regulator and control valve for the additive system were serviced this quarter. A failed bearing on belt conveyor L510C was replaced.

DOE
Throughout the quarter, weekly and monthly reports were communicated to the DOE COR. The technical report and project status reports for last quarter were completed and submitted to DOE in October.

CONCLUSION

During the extended outage, efforts were focused on completing an extensive list of maintenance and repairs throughout the plant, cleaning and servicing the pug mill/pug sealer/extruder, and installing and testing flow control dampers on the CV. The plant resumed processing SDA on November 24. Aggregate production for the quarter totaled 1,276 tons.

REFERENCES

Not applicable for this report.